



SAM (Stand Alone Module) DVI to FCAV, or FCAV to DVI Quick Start Guide

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1 Introduction

The Great River Technology (GRT) Stand Alone Module (SAM) is a convenient way to deliver FCAV functionality to any environment. The compact enclosure makes the GRT SAM a good solution for most FCAV applications. The optional USB interface with user-friendly software enhances the base functions of the GRT SAM.

This guide provides instructions for setup and operation of a GRT SAM. The SAM is delivered in one of two configurations:

- DVI to FCAV converter
- FCAV to DVI converter

A variety of video formats are available, but each GRT SAM is pre-configured for a specific speed and resolution:

- SAM 1Gb 1400x1050 MONO 60Hz
- SAM 1Gb 1600x1024 MONO 60Hz
- SAM 2Gb 1024x768 RGB 60Hz
- SAM 3Gb 1400x1050 RGB 60Hz
- SAM 3Gb 1440x900 RGB 60Hz

Additional formats and protocols may be available upon request.

The optional USB interface with SAMview software provide a user friendly way to control all aspects of the GRT SAM card, allowing the user to change header data, and control FCAV timing.

2 SAM Configuration and Options

2.1 DVI to FCAV Converter

The DVI to FCAV Converter is ideal for providing real time streaming video to the FCAV interface. Using a standard PC DVI output the power and flexibility of a PC as video source is transformed into a powerful and flexible FCAV video source.

Any DVI output source can be used as the DVI input to the GRT SAM, but a PC offers a wide range of static and dynamic video options. The DVI output must conform to the resolution and frame rate of the desired FC protocol. Not all PC video cards provide the programmability to meet the required video resolution and timing. In the case where the DVI timing and resolution do not match the FCAV protocol the SAM module will adjust to provide the best possible FCAV output. There are four possibilities for adjustment:

- The DVI Frame rate is less than the desired FCAV frame rate. In this case the FCAV frame rate will be set to match the DVI input frame rate.
- The DVI horizontal resolution is less than the desired FCAV horizontal resolution. The GRT SAM will repeat line data until the desired FCAV horizontal resolution is achieved. This will result in reduced frame rate as it may take more than one frame to build a complete FCAV image.
- The DVI horizontal resolution is greater than the desired FCAV horizontal resolution. The GRT SAM will truncate the image to the upper left corner to match the desired FCAV image size.
- The DVI frame rate is greater that the desired FCAV frame rate. The GRT SAM will skip every other incoming DVI frame and the resulting FCAV output will equal half the DVI input frame rate.

The GRT SAM will capture digital images from the DVI input then format, and output FCAV compliant containers. FCAV header data is automatically added to the FCAV stream.

The GRT SAM will power up to a known state ready to convert DVI to FCAV. In this mode default header data and FC timing are used to generate the FCAV format. The optional USB interface with SAMview software provide a user friendly way to control all aspects of the GRT SAM card, allowing the user to change header data, and control FC timing.

2.2 FCAV to DVI Converter

The DVI to FCAV Converter is ideal for viewing real time streaming video from an FCAV interface to a standard DVI monitor.

The GRT SAM DVI output can be connected to any compatible DVI monitor and used to view the video stream from a compliant FCAV. This configuration is ideal for verifying connectivity, and image quality.

The GRT SAM will power up to a known state ready to convert FCAV to DVI output.

In this configuration the SAM FCAV Optical Tx port will echo the FCAV Rx data, and in this way can be used as a line spy for FCAV video.

2.3 Status LED's

The Status LED's provide a quick means to validate the operation of the GRT SAM, and verify that the input source is valid. The LED's status names do not change for each configuration, but the interpretation of the LED's is slightly different for each configuration.

The LED's for the DVI to FC when 'ON' are defined to be:

- Power : The GRT SAM box is powered up and configured.
- Rx Present : The DVI input source is present.
- Rx Valid : The DVI input is the correct resolution defined by the SAM part number.
- Tx Valid : The FC output stream is active. If this LED is flickering then the DVI input Frame rate is faster than the FC output frame rate. Adjust the DVI source to get the correct DVI output frame rate and the LED will be a solid green.
- Test Pattern : The FC test pattern output option is selected. The FC output test patten consists of vertical color or monochrome bars, with the image borders highlighted, and an active scroll bar.
- Fault : A GRT SAM system fault has occurred. Contact GRT for assistance.

Te LED's for the FC to DVI when 'ON' are defined to be:

- Power : The GRT SAM box is powered up and configured.
- Rx Present : The FC optical power is present.
- Rx Valid : The FC input contains SOFi characters.
- Tx Valid : The DVI output is active.
- Test Pattern : The FC test pattern output option is selected. The DVI output test pattern is a static image of vertical color or monochrome bars
- Fault : A GRT SAM system fault has occurred. Contact GRT for assistance.

2.4 Power Connection

The GRT SAM is shipped with 100-240VAC to 24V 0.83A DC power adapter. The Power port is located on the side of the SAM enclosure illustrated in figure 2.4.1



Figure 2.4.1 GRT SAM DC power connection and Toggle Switch

2.5 Toggle Switch Functions

The toggle switch provides two functions. It can reset the GRT SAM to default settings, and it can enable the output of a test pattern. When the toggle switch is in the reset position all of the LED's on the top of the GRT SAM will light. When the toggle switch is in the Test Pattern position a test pattern will be output from the SAM either on FCAV or DVI depending on the SAM configuration. In the "Run" position the GRT SAM is ready to convert FCAV to DVI or DVI to FCAV depending on the SAM configuration. Figure 2.4.1 illustrates the toggle switch.

2.6 DVI Port and optional VGA Port

2.6.1 DVI to FCAV Configuration

In the DVI to FCAV configuration the DVI port is an input port only. Typically the GRT SAM DVI port is connected to the output of a standard PC. The PC graphics card is configured to the appropriate resolution, and timing. The GRT SAM will format and output the video to the FCAV connection. For this configuration there is an optional VGA output port that can be used to display data captured from the DVI input. This feature requires the optional USB interface with SAMview software. Figure 2.6.1 illustrates the DVI and optional VGA port locations.

2.6.2 FCAV to DVI Configuration

In the FC to DVI configuration the DVI port is an output port only. Typically the GRT SAM DVI port is connected to a standard PC monitor. The FCAV input will be converted to standard DVI output at the default resolution, per the SAM configuration option. Figure 2.6.1 illustrates the DVI and optional VGA port locations.



Figure 2.6.1 DVI and optional VGA port locations